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ABSTRACT

This study examined the relationship between level of experience and application of prior financial knowledge on the ability of auditing students and professionals to answer questions about financial statements. This study answers the following questions: (1) Is there a positive relationship between experience and the number of causal relations between financial concepts; and (2) What are the qualitative differences between the groups when the questions differ in complexity. A total of 25 fourth-year graduate students majoring in auditing, 29 postgraduate students with an average of 1.5 years of professional experience, and 22 postgraduate students with an average of 7 years professional experience were asked 10 questions of varying difficulty about a corporate financial statement. The study found that as student experience level increased, so did the application of financial causal knowledge. It also found that the more experienced students answered the more complex questions significantly better than the less experienced students did. The study concludes that experienced auditing students have a better organized and more complex financial knowledge network than less experienced auditing students. (MDM)

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The Effect of Experience on Financial Causal Knowledge in Auditing

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Abstract

In the present study three groups of students with different levels of experience were tested on their financial causal knowledge. Subjects were supposed to answer ten questions which varied in difficulty and were based upon financial relationships in a financial statement. Results confirmed our expectations that when experience increases, so does the application of financial causal knowledge. Especially, the experienced students answered the more complex questions significantly better than the less experienced students did. Thus, it may be concluded that experienced auditing students have a better organized and more complex financial knowledge network than less experienced auditing students.

Introduction

One of the main goals in business education is to prepare students effectively for their later business career. Over the last few years a growing number of business schools tries to innovate and improve curricula in order to make a well-matched fit between the educational program and practice. For example, Milter and Stinson (1995) describe several capabilities students should have acquired, when they enter practice. They claim that graduated students should not only have acquired knowledge, but they should also be able to apply prior knowledge.

Yet, in several domains it has been demonstrated that students often fail to apply domain knowledge to related tasks. The failure to apply domain knowledge in specific tasks appears to be related to the structure of that knowledge. For instance, Chi, Feltovich & Glaser (1981) demonstrated that the domain knowledge of experienced physicists was organized on the basis of relations between concepts and underlying abstract physics principles, whereas novices' knowledge was organized on the basis of surface features. These results showed that only the expert physicists integrated relations between concepts with conditions of application of these concepts. Particularly the combination of declarative knowledge (relations between concepts) and the procedural knowledge (conditions of application) should be associated with successful problem solving. Moreover, experts are able to match externally presented things and internal models of these things very quickly (Chi et al., 1981).

Regarding these findings in physics, we conducted a study in which the relationship between level of experience and organization and application of financial knowledge in auditing was examined (Vaatstra, Boshuizen & Schmidt, 1995). In that study, subjects of four levels of experience participated: fourth-year auditing students; postgraduate students who had previously followed the auditing curriculum at the university of Limburg and had about six months of experience in practice; postgraduate Nivra[1] students who had followed the part-time Nivra program and had an average of five years of practical experience and experienced auditors who had on average twelve years of experience. Subjects had to think aloud while they went through two financial statements of contractor firms. Afterwards, they had to mention all audit issues that would need special attention during the audit process. We were especially interested in the question as to how the subjects dealt with the financial information and which concepts were related with each other. For this, we examined not only the number of financial concepts, but also the type of relations between the financial concepts subjects used.

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[1] Nivra stands for the Netherlands Institute of Registeraccountants (Certified Public Accountants). Students in this educational program, work four days a week and spend one day a week at school for five to ten years.

Results indicated that graduate students and postgraduate university students with less than a year of practical experience hardly tried to relate financial concepts with each other. The few relations between concepts that were mentioned by these rather inexperienced students were mostly based upon concepts which had been presented close to each other. That is, either both concepts were situated in the balance sheet or both concepts were presented in the profit-and-loss account. Contrary to these inexperienced students, postgraduate Nivra students and experienced auditors related a large number of financial concepts with each other. Especially, concepts which had been situated far apart were often related with each other. For example, the experienced subjects related concepts from the balance sheet with concepts from the profit-and-loss account and with concepts from the general account. Moreover, the experienced subjects not only related separate financial concepts, but they also used the descriptive organizational information of the company to interpret the financial information (Vaatstra et al, 1995).

Thus, the more experienced Nivra students and the experienced auditors seem to have a better organized knowledge network and appear to know better how to apply their financial knowledge in comparison with the less experienced groups. So, despite the fact that the fourth year students and the postgraduate university students with about six months of practical experience had successfully completed all relevant financial courses as Bookkeeping, Financial Accounting and Financial Information Systems, they hardly use this financial knowledge in an auditing task like financial statement analysis.

In the present paper, a follow-up study is presented in which it is examined if the relationship between level of experience and application of prior financial knowledge will be found again when auditing students are confronted with direct questions about specific causal relationships in a financial statement. With this study we try to find answers on the following questions: First, is there a positive relationship between experience and the number of causal relations between financial concepts. Second, we expect to find qualitative differences between the groups when the questions differ in complexity. That is, the more experience a student has, the better (s)he answers on questions about more complex relationships. On the other hand, there might be a smaller difference between the experienced and inexperienced groups when the relationship is somewhat less complex.

Method

Subjects

Subjects of three levels of experience participated in this study: 25 fourth year graduate students majored in auditing; 29 postgraduate university students with an

average of one and a half year of experience. These postgraduate students majored in auditing had attended the university graduate program before they entered practice. The third group consisted of 22 postgraduate Nivra students with an average of seven years of experience. These postgraduate Nivra students were graduated at the Nivra institute.

The postgraduate university students and the postgraduate Nivra students followed the postgraduate program at the University of Limburg or at the University of Amsterdam. Postgraduate university and Nivra students enter the postgraduate program at the same time and can be assumed to have a similar level of theoretical knowledge. Yet, the two groups differ largely in practical knowledge, since university students have one and a half year of experience and Nivra students have seven years of experience.

Material

The stimulus material consisted of a financial statement of a contractor firm which was used in a prior experiment (see Vaatstra et al., 1995). The test contained ten questions which were based on relationships between concepts expressed by experienced auditors in the think aloud study (Vaatstra et al., 1995). Questions and answers were restated by an expert in Bookkeeping and Financial Information Systems. According to this expert the test could be categorized in easy and difficult questions. Easy questions required answers which had been presented in textbooks and/or consisted of a rather simple underlying network. An example of a question concerning a simple knowledge network is: "How is it possible that there is a negative investment in 1990?"

The answer to a difficult question is not directly available in a textbook and requires a complex underlying financial knowledge network. A difficult questions was for example: "Describe the relationship between changes in Working Capital compared to changes in the Turnover?"

Procedure

Subjects took the test at home. We gave the subjects two instructions: first, they were asked to answer the questions as extensive as possible and second, the questions concerned this specific case.

Time necessary to finish the test was approximately an hour and subjects received a small compensation for their participation.

After the test, some demographic facts were asked and there was an evaluation of the test.

Analysis

For all questions, the correct answers consisted of several correct parts. The more correct concepts a subject applied, the higher score (s)he received. The maximum score subjects could receive per question was ten, so the overall maximum was 100. Two persons coded the data, of whom one was unknown with the hypotheses that were stated.

For final analysis of the data, the average score of the two encoders was taken. Data were analyzed by means of analysis of variance and Scheffe's F-test. Scheffe's F-test was used to compare specific group differences.

Results

First, there is a sufficient correlation of .73 between the two encoders.

In Table 1, it is shown that there is a significant difference between the three groups of students on the total scores, $F(2,73) = 19.08$, $p < .0001$.

	Total	Easy	Difficult
Graduate	28,5 (10,6)*	15,4 (5,4)	12,8 (7,4)
Postgraduate university	37,9 (10,1)	20,2 (7,2)	17,5 (6,4)
Postgraduate Nivra	45,2 (5,8)	21,6 (3,8)	23,3 (5,1)

* between parenthesis is the standard deviation

Table 1 Average scores and standard deviations

Differences between the groups on easy and difficult questions are also depicted in Table 1, $F(2,73) = 19.73$, $p < .0001$. No differences were found between the easy and difficult questions, $F(1,8) = 2.27$, $p < .14$. Neither was there a significant interaction between group and type of question, $F(2,73) = 2.37$, $p < .11$.

Table 2 summarizes Scheffé's comparisons between the concerned groups on total, easy and difficult test scores. As is shown all groups differed significantly from each other on the total score. On the easy questions, Scheffé's F-test indicated that fourth year students differed significantly from both the postgraduate university students and the postgraduate Nivra students. There was however no significant difference on the easy questions between the postgraduate groups. Regarding the results on the difficult questions, all group comparisons showed significant differences.

	Mean difference (Scheffé F-test).	Mean difference (Scheffé F-test).	Mean difference (Scheffé F-test).
	total score	easy score	difficult score
4th years vs post university	-9.4 (6.86)*	-4.8 (4.7)*	-4.8 (3.7)*
4th years vs postnivra	-16.6 (18.8)*	-6.2 (6.8)*	-10.6 (15.8)*
post university vs postnivra	-7.3 (3.8)*	-1.4 (0.4)	-5.8 (5.1)*

* Significant at 95%

Table 2 Mean differences and Scheffé's comparisons

Conclusion and Discussion

The results show that the more experienced groups have higher scores on the test, indicating that these experienced students do not only have more financial concepts available in memory, but they also have a financial knowledge network that is better organized.

Furthermore, the expectations about the relationship between differences in experience and qualitative differences in the applications of financial knowledge were confirmed. That is, when the questions became more complex, experienced Nivra students gave qualitatively better answers than the less experienced subjects. The differences between the groups were somewhat smaller on the relatively easy questions.

Yet, a finding which was somewhat surprising, were the relatively low scores by all subjects on this reasoning test. The maximum total score that could be reached was 100 points, whereas the highest score attained was 55,5. These rather disappointing scores could bring up the idea that financial knowledge might not be important for the auditing practice. Yet, the evaluative questionnaire with questions about students' opinion on analysis of financial statements demonstrate the opposite. The question concerned, was: "What do you think when a course, comparable to this financial statement task, would be given in the auditing graduate program"? Subjects could answer on a Likert scale varying from unimportant to very important and were also asked to explain their answer. As is demonstrated in Table 3, all groups think it is quite important to receive a course comparable to this financial statement task. The answers of fourth year students indicate that these students think it is somewhat more important to receive a similar course than the postgraduate university students and postgraduate Nivra students.

	What do you think when a course, comparable to this financial statement task, would be given in the auditing graduate program ?
Fourth year	4.3 (0.75)*
Postgraduate university	4.14 (0.76)
Postgraduate Nivra	3.96 (0.93)

1 = unimportant;2 = more or less important;3 = no meaning;4 = important; 5 = very important;
* = standard deviation.

Table 3 Means and standard deviation on question about relevance of task

The explanation almost every participating subjects gave, was that this financial application task is absolutely important to prepare them for the auditing practice. An additional answer that was given by fourth year students was that they thought it was a pity, they had not been given the opportunity to attend such a course in the curriculum. They were convinced that if there had been more training on the interpretation of financial information in an auditing context, they might have performed better on this test. So, although all subjects knew financial knowledge is important for practice, they were not able to demonstrate their knowledge in this particular test.

A plausible reason for the relatively low scores on this knowledge test might be that the students were not used to the manner in which they were supposed to answer. After all, we asked them to answer as extensive as possible, while students normally have to give just one answer. For instance, students usually have to answer a question like: "How is it possible that there is a negative investment in 1990?" with the answer " there are more disinvestments than investments in assets". In the present test, in order to receive the maximum ten points, students also had to give the answers: "fixed assets have been sold"; " current floating assets have decreased" and finally "financial assets have decreased". Hence, the answers had to be more specific and extensive than in the usual tests and that probably has had its influence on the relatively low scores of the test. The results on the test support this conjecture, most subjects answered all questions just partly.

A final explanation for the relatively low scores could be that even the Nivra students do not have such a perfect refined network, they can answer all question perfectly.

Although all students scored relatively low on the test, graduate students performed somewhat better on this direct assessment than on the prior think aloud study (Vaatstra et al., 1995). What could be the explanation for that? One possible

reason might be that graduate students do not recognize the importance of financial relationships in an auditing context when they do not receive a hint. When graduate students are directly asked about the relevance of financial information for the auditing practice, they are likely to answer that financial analysis is very important for the auditing practice (see Table 3). Yet, to spontaneously apply financial knowledge in an auditing task is another thing. Probably, students never learned how to apply and integrate their financial knowledge in an auditing case. In the previous study (Vaatstra et al., 1995), some graduate students remarked that they thought they had to mention internal control issues and no financial misstatements. Since they never had attended a course in which they had to apply financial knowledge to the audit of a company, students were not aware of the fact that they also had to mention financial issues when they were asked for important audit issues. Thus, although graduate students know financial misstatements are important for the auditing practice, they do have some difficulty in applying their financial knowledge unprompted to an audit task.

So what has to be done in the future, in order to prepare students well for practice, is to develop a specific integrated course about the application of financial knowledge in the audit environment.

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